

Appl. No. 09/401,681  
Amdt. dated Oct. 18, 2004  
Reply to Office Action of June 16, 2004

PATENT

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings of claims in the application:

**Listing of Claims:**

1-2. Canceled.

3. (Previously presented) The method according to claim 6 wherein said error signal provides input to a regulating element for regulation to a condition of homeostasis.

4-5. Canceled.

6. (Currently amended) In a computer system, a method for performing and presenting ~~simplifying a~~ simulation of a complex dynamic system representative of a living organism, ~~said complex dynamic system simulation being based on a computer model~~ comprising a plurality of interacting nodes of interest in a network of said nodes of interest, said method comprising:

providing as elements of said computer model a plurality of said nodes of interest representative of a elements of said living organism ~~in said computer system~~, said nodes of interest being established at a selected plurality of levels of a nested hierarchy of source-sink relationships, each node of interest being modeled as having at least one input, at least one output paired with said at least one input, at least one transformation of inputs, at least one transformation of outputs, a measurable ratio of input transformation rate to output transformation rate of an input/output pair, at least a first activated state in the node corresponding to an excess measurable ratio of input to output, at least a second activated state in the node corresponding to a deficit measurable ratio of input to output, ~~and~~ transient storage of a product of the input;

providing as elements of said computer model a plurality of pathways among outputs and inputs of selected nodes in order to support reciprocal feedback;

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for each node of interest, ~~defining~~ identifying a balanced state between said first activated state and said second activated state, said balanced state corresponding to a zero error between said measurable ratio and a pre-established balanced ratio, said pre-established balanced ratio corresponding to a ~~mathematical~~ critical point in thermodynamic energy;

activating said computer system to seek ~~seeking~~ said balanced state as homeostasis at each level in said nested hierarchy to account for interaction between nodes of interest throughout said nested hierarchy;

for each said node of interest, sensing for non-zero error between said measurable ratio and said preestablished balanced ratio;

using said non-zero error as a control signal to mediate at least one of said inputs, said outputs and an external process; and

~~depicting each said~~ presenting output information representative of physical transformations of selected ones of said nodes via an output device ~~four dimensional model in five orthogonal dimensions of space, time and grayscale, said grayscale representing a mapping from a second temporal dimension.~~

7. Canceled.

8. (Currently amended) The method according to claim 6 wherein selected ones of said balanced states corresponding to said critical point is selected for maximum stability of said balanced state.

9. (Currently amended) The method according to claim 6 wherein selected ones of said balanced states corresponding to said critical point is selected in response to sensing said outputs of said nodes.

10. (Canceled)

11. (Canceled)

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12. (New) A method for producing a simulation of a living organism on a computer system comprising:

modeling said living organism as a plurality of interacting nodes of interest in a network, each said node of interest having at least one *energy* input, at least one *energy* output, said at least one output being paired with one of said at least one inputs, at least one transformation of inputs, at least one transformation of outputs, a measurable ratio of input transformation rate to output transformation rate of each input/output pair, a balanced state, said balanced state defined as a zero error between said measurable ratio and a pre-established balanced ratio for each input/output pair at a critical point in thermodynamic energy, at least a first activated state in the node corresponding to an excess measurable ratio of input to output for each input/output pair, at least a second activated state in the node corresponding to a deficit measurable ratio of input to output for each input/output pair, transient storage of a product of the input transformation, and a plurality of pathways between outputs of first selected nodes of interest to inputs of second selected nodes of interest;

establishing said nodes at a plurality of levels of a nested hierarchy of source-sink relationships;

activating said computer system to cause said living organism simulation to seek said balanced states at each level in said nested hierarchy, including:

sensing for non-zero error between said measurable ratio and said pre-established balanced ratio for each said node of interest, and

using said non-zero error as a control signal to control increase and decrease of at least one of said inputs, said outputs and an external process to drive to said node to seek said balanced state; and

presenting said representations of selected ones of said nodes of said simulation process representative of physical transformations to an output for display.

13. (New) The method according to claim 1 wherein said pathways form links for ~~double~~ reciprocal feedback among said nodes.